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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.       | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------------|------------------|
| 10/763,093   | 01/22/2004  | Hung C. Ngo          | AUS920031046US1           | 6055             |
| 7590<br>Kelly K. Kordzik<br>P.O. Box 50784<br>Dallas, TX 75201 |             |                      | EXAMINER<br>CHANG, JOSEPH |                  |
|  |             |                      | ART UNIT<br>2817          | PAPER NUMBER     |
| DATE MAILED: 05/25/2005  |             |                      |                           |                  |

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/763,093

Applicant(s)

NGO, HUNG C.

Examiner

Joseph Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 12-19 and 24 is/are rejected.
- 7) ☐ Claim(s) 8-11, 20-23 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/22/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Drawings***

Figures 1-2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 12-19, 24 are rejected under 35 U.S.C. 103(a) as being obvious over Boerstler (US Patent No. 6353369) in view of Favors, Jr. et al. (US Patent No. 6133799).

Regarding Claims 1, 2, 12, Boerstler discloses a vco comprising a ring oscillator (Fig.1) having an odd number M (seven 7 inverters, 102,104,106,108,110,112, 114) and a number K of voltage control feedforward (FF) stages (seven, 7 stages: 116, 118, 120,

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122, 124, 126, 128) coupled with K (7) groups of an odd number of G (three 3) inverters (102, 104, 106 for 116 FF stage, for example) selected from the M inverters (seven 7 inverters, 102, 104, 106, 108, 110, 112, 114), each of the K FF stages (inverter 130 and transmission gate 144) having PFET and NFET (Col. 3, line 15- Col.4, line 55).

However, Boerstler does not explicitly disclose that the M inverters are of CMOS and the FF stages have connections of isolated region of semiconductor material that is the body terminals of P and N FET to control voltages as recited in the claim 1.

Favors, Jr. et al. discloses a ring oscillator with CMOS inverters and further discloses that the inverters have isolated region of semiconductor material (SOI, Col. 4, lines 44-53) and the body terminals of SOI CMOS FET being connected to control voltages for controlling switching speed to control oscillation frequency. Since, the notion of controlling switch speed of inverters by applying voltages to the isolated region of FET, It would have been obvious to one of ordinary skill in the art to use the SOI CMOS FET, (both N- and P-channel MOSFETs) and applies the control voltages to the body terminals of the CMOS FET including inverters in FF stages because such a modification would have provided the benefit of controlling the switching speed of inverters for fine adjustment of the oscillation frequency.

Regarding Claim 2-7, Figure 1 of Boerstler shows the K FF stage (116) having an inverter (130) coupled in series with a transfer gate stage (144) (such functional and structure limitations would have been obvious as a consequence of the modification)

Regarding Claims 13-19, 24, Boerstler suggest that the VCO discussed above uses a PLL (Col. 4, line 5) which one of ordinary skill in the art would have obviously

recognized that the PLL includes a phase detector, a frequency divider and a VCO as recited in the claims.

***Allowable Subject Matter***

Claims 8-11, 20-23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the best prior art of record, Boerstler, taken alone or in combination of other references, does not teach or fairly suggest clamping circuits as set forth in the claims.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Leonowich discloses a ring oscillator having feedforward stages.

Vu et al. discloses a ring oscillator with feedforward connections.

Neidorff discloses a ring oscillator with a bypass network having a laser trimmable fuse.

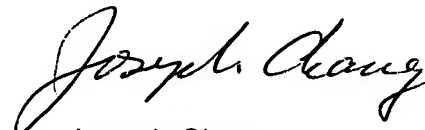
Boerstler et al. discloses an interleaved voltage controlled ring oscillator.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Chang whose telephone number is 571 272-1759. The examiner can normally be reached on Mon-Fri 0700-1730.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Joseph Chang  
Patent Examiner  
Art Unit 2817